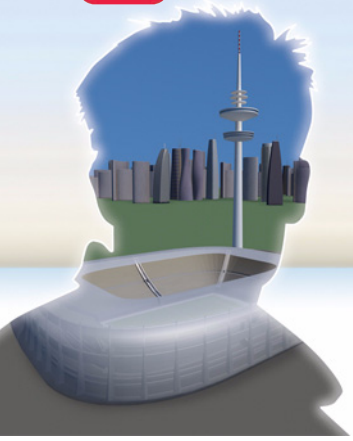

Leica Viva TPS
Getting Started Guide

Version 3.0
English

- when it has to be **right**

Leica Geosystems

Introduction

To use the products in a permitted manner, please refer to the detailed safety instructions in the Leica CS10/CS15 User Manual, Leica GS10/GS15 User Manual, Leica TS11/TS15 User Manual and Leica TPS1200+ User Manual.

For detailed descriptions of all functions and settings of the product and applications, please refer to the Leica Viva Series Technical Reference Manual.

Purpose of this manual

This Getting Started Guide is intended as a quick field reference manual for immediately getting started with your Leica Viva Series equipment. The manual explains what you can find in your container, how everything fits together and how to get started on the basic applications.

Quick references to specific topics

Topic	Refer to
What's in my container?	Chapter 1.1
How does the equipment all fit together?	Chapter 1.2
What is this first screen I see when I turn on my instrument?	Chapter 2.1
How do I get to the Main Menu?	Chapter 2.1
How do I select things and move around the screens?	Chapter 2.2
What are wizards?	Chapter 2.2

Topic	Refer to
How do I get started with jobs and codelists?	Chapter 3
How to use the applications?	Chapter 4

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myWorld@Leica Geosystems (**https://myworld.leica-geosystems.com**) offers a wide range of services, information and training material.
With direct access to myWorld, you are able to access all relevant services whenever it is convenient for you, 24 hours a day, 7 days per week. This increases your efficiency and keeps you and your equipment instantly updated with the latest information from Leica Geosystems.

Service	Description
myProducts	Simply add all Leica Geosystems products that you and your company own. View detailed information on your products, buy additional options or Customer Care Packages (CCPs), update your products with the latest software and keep up-to-date with the latest documentation.

Service	Description
myService	View the service history of your products in Leica Geosystems Service Centers and detailed information on the services performed on your products. For your products that are currently in Leica Geosystems Service Centers view the current service status and the expected end date of service.
mySupport	Create new support requests for your products that will be answered by your local Leica Geosystems Support Team. View the complete history of your Support and view detailed information on each request in case you want to refer to previous support requests.
myTraining	Enhance your product knowledge with the Leica Geosystems Campus - Information, Knowledge, Training. Study the latest online training material or download training material on your products. Keep up-to-date with the latest News on your products and register for Seminars or Courses in your country.

Table of Contents

In this manual

Chapter			Page
1	**Equipment**		**7**
1.1	Container Contents		7
1.2	Setting Up the TPS Instrument		13
1.3	Setting Up SmartStation		15
1.4	Setting Up SmartPole		18
1.5	Setting up for Remote Control (with the RadioHandle)		20
1.6	Setting up for Remote Control (with the TCPS28)		21
1.7	Fixing the CS to a Holder and Pole		23
2	**SmartWorx Viva and Principles**		**27**
2.1	SmartWorx Viva		27
	2.1.1	Screen	29
	2.1.2	Icons	33
	2.1.3	Main Menu	37
	2.1.4	Leica Favourites	40
2.2	Operating Principles		43
2.3	Connecting TPS instrument and CS field controller		49

3 Jobs & Data **50**
3.1 Creating a New Job 50
3.2 Creating a Codelist 52
3.3 Importing ASCII Data into a Job 57

***4* Applications** **61**
4.1 Setup 62
4.2 Survey 69
4.3 Stakeout 72
4.4 Reference Line 77

Appendix A Working with Memory Devices **80**
A.1 Formatting a Memory Device 80
A.2 Directory Structure of the Memory Device 83

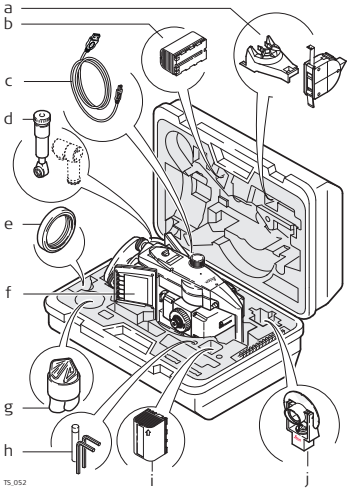
Appendix B Uploading System Files **86**

Appendix C Leica Geo Office **89**

1 Equipment

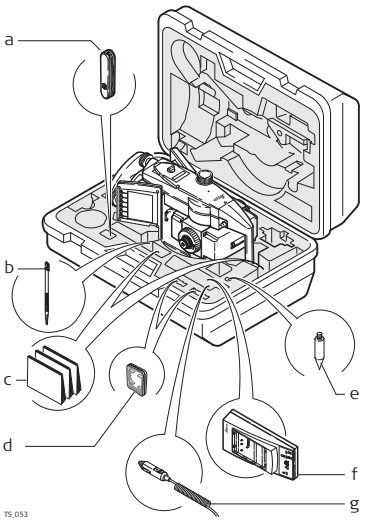
1.1 Container Contents

Container for instrument and delivered accessories part 1 of 2



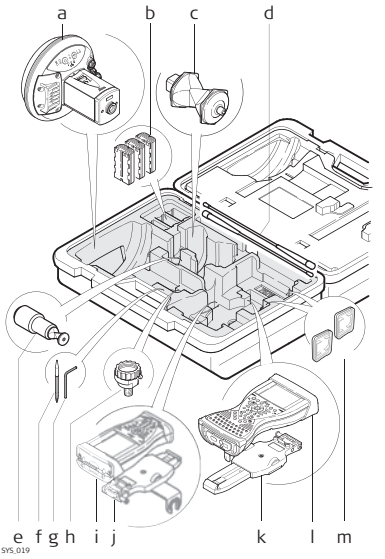
a) GHM007 Instrument height meter and GHT196 tribrach bracket for height meter
b) GEB221 battery
c) Data transfer cable
d) GFZ3 or GOK6 diagonal eyepiece
e) Counterweight for diagonal eyepiece
f) Instrument with tribrach and standard handle or RadioHandle
g) Protective cover for instrument, sunshade for objective lens and cleaning cloth
h) Allen key
i) GEB221 battery
j) GMP101 mini prism

Container for instrument and delivered accessories part 2 of 2



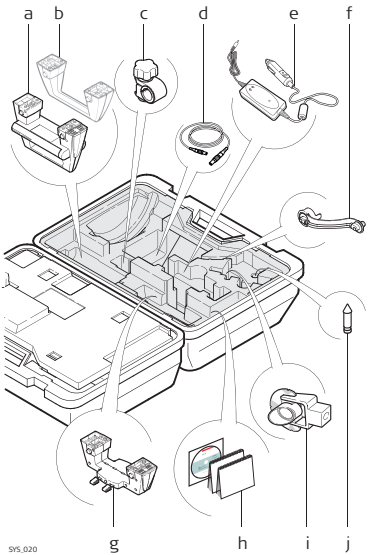
a) Pocket knife
b) Spare stylus
c) Manuals
d) 2 x SD cards and covers
e) Tip for mini prism
f) GKL211 battery charger
g) Car adapter power plug for battery charger (stored under battery charger)

Container for GS15 SmartPole/ SmartStation and delivered accessories part 1 of 2



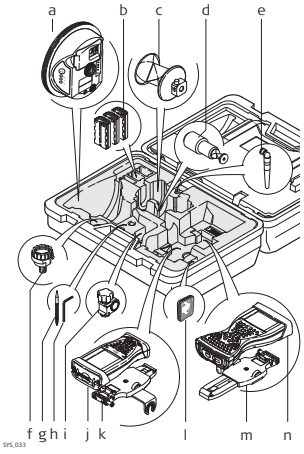
a) GS15 instrument
b) GEB211 / GEB212 battery
c) GRZ4 / GRZ122 prism
d) Radio antennas
e) GRZ101 mini prism and GAD103 adapter
f) Spare stylus
g) Allen key
h) GAD31 adapter
i) CS10 field controller
j) GHT62 holder
k) GHT62 holder (extended)
l) CS15 field controller
m) SD card / CompactFlash card and covers

Container for GS15 SmartPole/ SmartStation and delivered accessories part 2 of 2



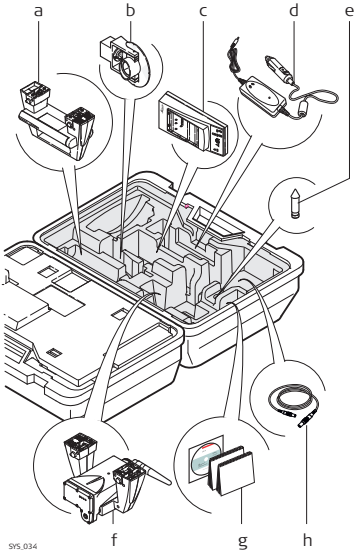
a) RH15 RadioHandle
b) Instrument carry handle
c) GHT63 clamp
d) Cables
e) GDC221 car adapter for CS field controller
f) GAD108 arm
g) GAD110 adapter for GS15 instrument
h) Manuals & DVD
i) GMP101 mini prism
j) Mini prism spike

Container for GS12 SmartPole/ SmartStation and delivered accessories part 1 of 2



a) GS12 instrument
b) GEB211 / GEB212 battery
c) GRZ4 / GRZ122 prism
d) GRZ101 mini prism
e) GAD103 adapter for GRZ101 mini prism
f) GAD31 adapter
g) Spare stylus
h) Allen key
i) GHT63 clamp
j) CS10 field controller
k) GHT62 holder
l) SD card / CompactFlash card and covers
m) GHT62 holder (extended)
n) CS15 field controller

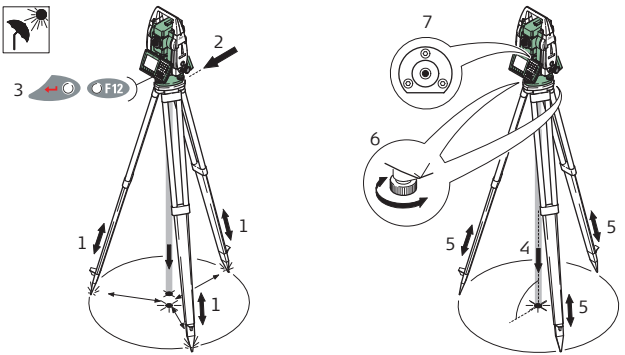
Container for GS12 SmartPole/ SmartStation and delivered accessories part 2 of 2



a) RH15 RadioHandle
b) GMP101 mini prism
c) Field controller
d) GDC221 car adapter for CS field controller
e) Mini prism spike
f) GAD104 adapter for GS12 instrument
g) Manuals & DVD
h) Cables

1.2 Setting Up the TPS Instrument

TPS setup step-by-step



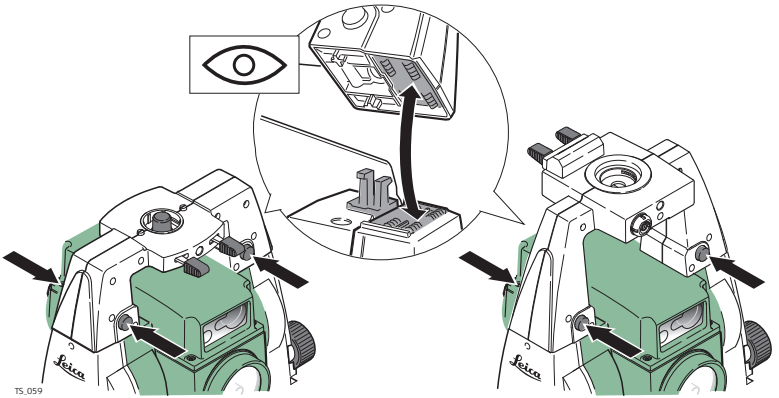
TS_064

Step	Description
☞	Shield the instrument from direct sunlight and avoid uneven temperatures around the instrument.
1.	Extend the tripod legs to allow for a comfortable working posture. Position the tripod over the marked ground point, centring it as well as possible.

Step	Description
2.	Fasten the tribrach and instrument onto the tripod.
3.	Turn on the instrument by pressing . Select **Main Menu**/**Instrument**/**TPS settings**/**Level bubble & compensator** to activate the laser plummet and electronic level.
4.	Move the tripod legs (1) and use the tribrach footscrews (6) to centre the plummet (4) over the ground point.
5.	Adjust the tripod legs to level the circular level (7).
6.	By using the electronic level, turn the tribrach footscrews (6) to level the instrument precisely.
7.	Centre the instrument precisely over the ground point (4) by shifting the tribrach on the tripod plate (2).
8.	Repeat steps 6. and 7. until the required accuracy is achieved.

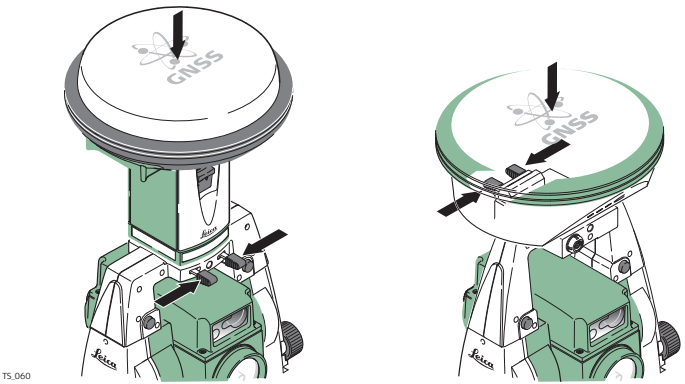
1.3 Setting Up SmartStation

SmartStation setup step-by-step



Step	Description
1.	Place the adapter for the GS15/GS12 instrument onto the instrument by simultaneously pressing and holding-in the four push buttons.

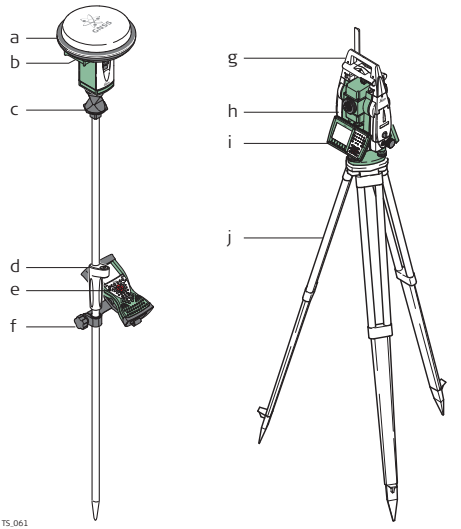
Step	Description
☞	Ensure that the interface connection on the underside of the adapter is on the same side as the Communication side cover.



Step	Description
2.	Place the GS15/GS12 instrument onto the adapter by simultaneously pressing and holding-in the two press clips.

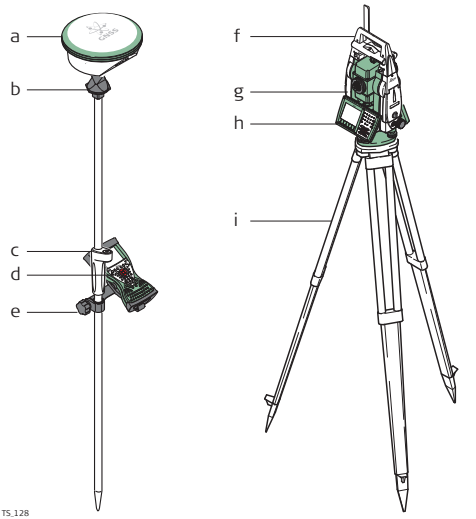
1.4 Setting Up SmartPole

SmartPole setup using GS15 on a TS15 instrument



a) GS15 instrument
b) RTK slot-in device
c) GRZ122 360° prism
d) GLS30 pole with snap-lock positions
e) CS field controller
f) GHT62 holder and GHT63 clamp
g) RH15 RadioHandle
h) Communication side cover, integrated
i) TS15 instrument
j) Tripod

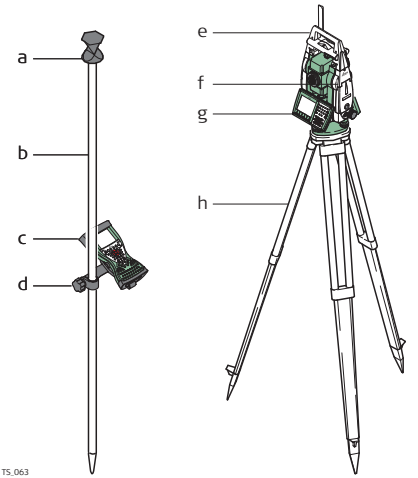
SmartPole setup using GS12 on a TS15 instrument



a) GS12 instrument
b) GRZ122 360° prism
c) GLS12 cm/GLS12F ft pole with snap-lock positions
d) CS field controller
e) GHT62 holder and GHT63 clamp
f) RH15 RadioHandle
g) Communication side cover, integrated
h) TS15 instrument
i) Tripod

1.5 Setting up for Remote Control (with the RadioHandle)

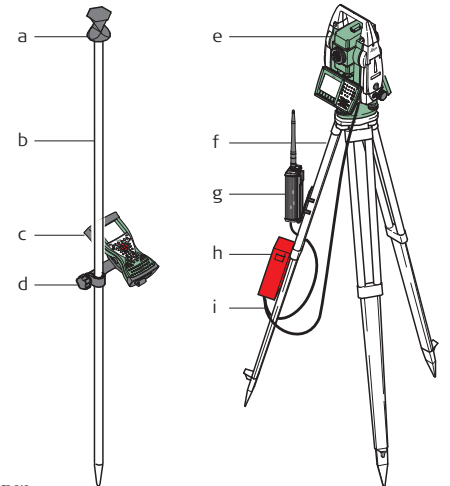
TPS / CS setup for remote control with RadioHandle



a) 360° prism
b) Prism pole
c) CS field controller
d) GHT62 holder and GHT63 clamp
e) RH15 RadioHandle
f) Communication side cover
g) TPS instrument
h) Tripod

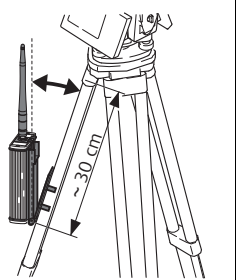
1.6 Setting up for Remote Control (with the TCPS28)

TPS / CS setup for remote control with TCPS28



a) 360° prism
b) Prism pole
c) CS field controller
d) GHT62 holder and GHT63 clamp
e) TPS instrument
f) Tripod
g) TCPS28
h) External battery
i) Y-cable

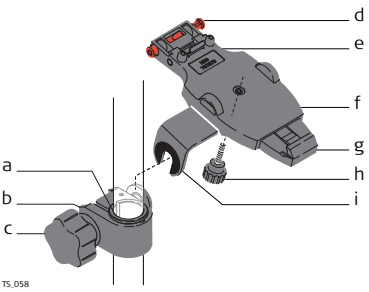
Mount base radio to tripod step-by-step

Step	Description
1.	The GHT43 tripod adapter is used to mount the TCPS28 to all Leica standard tripods, and to optimise the radio transmission performance. Attach the TCPS28 to the adapter and then attach the adapter to the tripod leg.
2.	Adjust the angle of TCPS28 until it is vertical.
3.	Adjust the location of the adapter on the tripod leg so that there are no metallic objects in the horizontal plane around the antenna. ☞ Metallic objects near the antenna disturb radio transmissions.
4.	☞ To achieve the best performance from the TCPS28, mount it in a vertical position on the tripod leg, approximately 30 cm from the top. ☞ If the adapter is no longer able to retain its angle position, the adjustment bolt at the hinge can be tightened slightly. 

1.7 Fixing the CS to a Holder and Pole

Components of the GHT62 holder

The GHT62 holder consists of some components, as shown in the diagram.



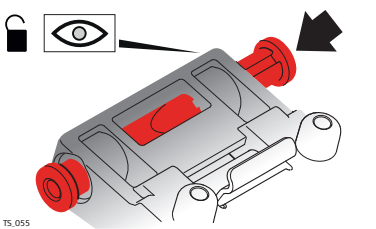
GHT63 clamp

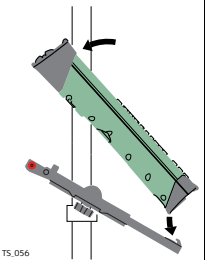
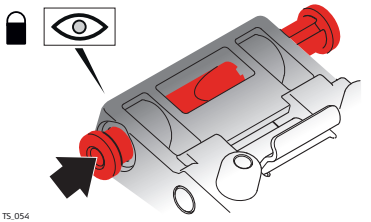
a) Plastic sleeve
b) Pole clamp
c) Clamp bolt

GHT62 holder

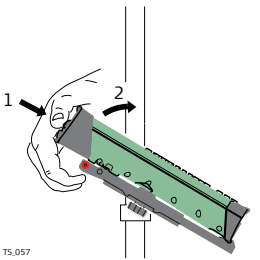
d) Locking pin
e) Top clip
f) Mounting plate (extendable)
g) Bottom clip
h) Tightening screw
i) Mounting arm

Fixing the CS field controller and GHT62 to a pole step-by-step

Step	Description
☞	If you use the CS15 field controller, extend the mounting plate of the holder first.
☞	For an aluminium pole, fit the plastic sleeve to the pole clamp.
1.	Insert the pole into the clamp hole.
2.	Attach the holder to the clamp using the clamp bolt.
3.	Adjust the angle and the height of the holder on the pole to a comfortable position.
4.	Tighten the clamp with the clamp bolt.
5.	Before the CS field controller is placed onto the mounting plate, ensure that the locking pin is put into the unlocked position. To unlock the locking pin, push the locking pin to the left. 
6.	Hold the CS field controller above the holder and lower the end of the CS field controller into the mounting plate.

Step	Description
7.	Apply slight pressure in a downward direction and then lower the top part of the CS field controller until the unit is clicked into the holder. The guides of the mounting plate aid in this action.  TS_056
8.	After the CS field controller is placed onto the mounting plate, ensure that the locking pin is put into the locked position. To lock the locking pin, push the locking pin to the right.  TS_054

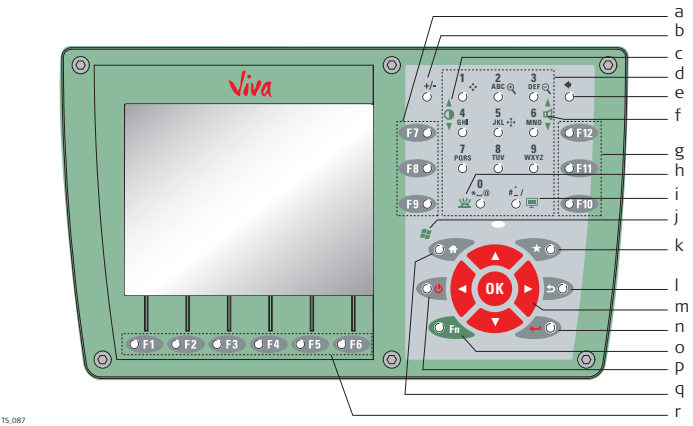
Detaching the CS from a pole step-by-step

Step	Description
1.	Unlock the locking pin by pushing the locking pin to the left of the mounting plate.
2.	Place palm over the top of the CS until fingers grip the bar of the holder underneath.
3.	Push from the top of the CS toward the bar of the holder.
4.	While in this position, lift the top of the CS from the holder. 

2 SmartWorx Viva and Principles

2.1 SmartWorx Viva

Keyboard TS11/TS15



a) Function keys **F7** - **F9**
b) ± key
c) Brightness
d) Alphanumeric keys
e) Backspace
f) Volume
g) Function keys **F10** - **F12**
h) Keyboard illumination
i) Screenshot
j) Windows CE
k) Favourites
l) ESC
m) Arrow keys, **OK**
n) ENTER
o) **Fn**
p) ON/OFF
q) Home
r) Function keys **F1** - **F6**

Start using SmartWorx Viva

- Turn on your GS GNSS or TPS instrument.
- Turn on your CS field controller and start SmartWorx Viva.

For information about wizards refer to "Wizards".

2.1.1 Screen

Screen - CS15 field controller

a) Icons
b) Title
c) Screen area
d) Message line
e) Softkeys
f) ESC
g) Fn
h) Entry mode
i) Time

Elements

Element	Description
Time	The current local time is shown.
Title	Name of the screen is shown.
Screen area	The working area of the screen.
Message line	Messages are shown for 10 s.

Element	Description
Icons	Shows status information of the instrument. Refer to "2.1.2 Icons". Can be used with touch screen.
ESC	Can be used with touch screen. Same functionality as the fixed key ESC. The last operation will be undone.
Entry mode	The caps mode for upper case letters is active. The caps mode is activated and deactivated by pressing the CAPS key.
Fn	Switches between the first and second level of function keys.
Softkeys	Commands can be ran using F1-F6 keys (only applicable for CS15 field controller). The commands assigned to the softkeys are screen-dependent. Can be used directly with touch screen.

Common softkeys

The softkeys following are used commonly in the Leica SmartWorx Viva software across all applications.

Softkey	Function Key	Description
OK	**(F1)**	To select the highlighted option and to continue with the subsequent screen.
Page	**(F6)**	To change to another page on the current screen.
Help	**Fn (F1)**	To open the Leica SmartWorx Viva online help.
Home	**Fn (F2)**	To move the focus to the top of the list shown in the current screen.
End	**Fn (F3)**	To move the focus to the bottom of the list shown in the current screen.
Quit	**Fn (F6)**	To exit the current application and return to the screen from where the application was accessed.

Key combinations

Key	Function
Fn + 1	Hold **Fn** while pressing **1**. Increase the screen brightness.
Fn + 3	Hold **Fn** while pressing **3**. Increase the volume for acoustic warning signals, beeps and keypresses on the CS field controller.
Fn + 4	Hold **Fn** while pressing **4**. Decrease the screen brightness.
Fn + 6	Hold **Fn** while pressing **6**. Decrease the volume for acoustic warning signals, beeps and keypresses on the CS field controller.
Fn + 0	Hold **Fn** while pressing **0**. If keyboard illumination is already off: Turns on keyboard illumination. If keyboard illumination is already on: Turns off keyboard illumination.
Fn + .	Hold **Fn** while pressing **.**. Take a screenshot of the current SmartWorx Viva screen. Refer to "Taking a screenshot".

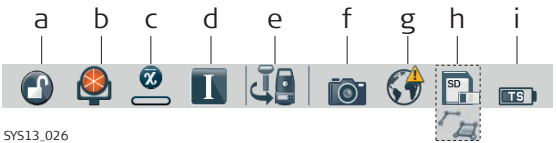
2.1.2 Icons

Description

The screen icons display the status information of the instrument.

The icons provide information related to basic instrument functions. The icons that appear depend upon which instrument is used and the current instrument configuration.

Icon bar - TPS Mode



SYS13_026

a) Automatic aiming
b) Prism
c) Measure mode
d) Instrument face I&II/Compensator level
e) Current active instrument
f) Camera
g) Line/area/auto points
h) Memory storage (SD card/USB stick/internal memory)
i) Battery level (field controller/instrument)

Icons

Icon	Description
Automatic aiming	Displays the current automatic aiming, PowerSearch or prism search/lock settings.
Prism	Displays the selected prism.
Measure mode	Displays the selected measurement mode. The red laser icon will display when the red laser is active.
Compensator level and instrument face I or II	Displays the compensator off or out of range icons, or the instrument face I or II icon.
Current active instrument	Displays the instruments that are currently configured and active. When more than one instrument is configured, the instrument at the front of the icon is the active instrument.

Icon	Description
Camera	Select this icon to begin the camera function.
Data management	Select this icon to open the data management pages for **Points**, **Lines** or **Areas**. If there are open lines or areas, a symbol will appear in the icon.
Memory storage	Displays the status of the internal memory or data storage device.
Battery	Displays the status and location of the battery.

GNSS specific icons

Icon	Description
Position status	Displays the status of the current position. As soon as this icon becomes visible the instrument is in a stage where practical operation can commence.

Icon	Description
Number of visible satellites	Displays the number of theoretically visible satellites above the configured cut-off angle according to the current almanac.
Contributing satellites	Displays the number of satellites that are contributing to the currently computed position solution. The number of contributing satellites can differ from the number of visible satellites. This difference can be because satellites cannot be viewed, or because the observations to these satellites are considered too noisy to be used.
Real-time device	Displays the real-time device configured to be used.
Real-time status	Displays the status of the real-time device configured to be used.

2.1.3 Main Menu

Main Menu

OK

To select the highlighted option and to continue with the subsequent screen.

Fn Mode

To switch between GPS and TPS modes

Fn Exit

To close Leica SmartWorx Viva software.

Main Menu functions

Main Menu function	Description
	Go to Work! • To select and start an application.
	Jobs & Data • To manage jobs, data, codelists, GNSS antennas, reflectors and coordinate systems. • To export data from a job on the instrument to a file on the memory device in a customised ASCII format or in DXF format. • To import ASCII, GSI or DXF data from a file on the memory device to a job on the instrument. • To copy points between jobs.
	Instrument • To access all configuration parameters related to a survey, the instrument and the interfaces. • To view the various instrument status screens. • For TS11/TS15: To configure the camera, if available.

Main Menu function	Description
	User • To format the memory device. • To upload files relevant for the instrument functionality, for example, firmware files, language files and licence keys. • To transfer data between the memory device and a standard and simple FTP server. • To view files on the memory device or the internal memory. • To access all configuration parameters individualising the system and the working style. • For TS11/TS15: To check and adjust the compensator, index error and line of sight error.

2.1.4 Leica Favourites

Description

Frequently used settings can be accessed and changed quickly through the **Leica TPS Favourites** and **Leica GPS Favourites** screens. The change is applied immediately and the workflow is not interrupted.
The screens display selectable icons for quick check functions or for available settings to change to.

Access

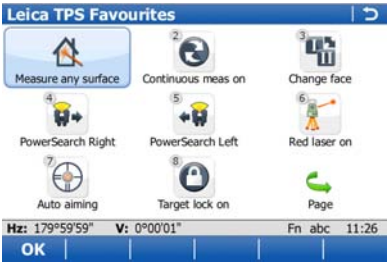
For TPS:

- Tap the target aiming icon or select .

For GPS:

- Tap the position status icon or select .

Leica TPS Favourites



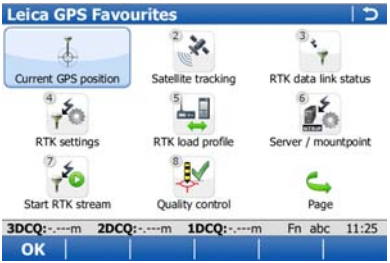
OK
To apply the selected setting or to access the selected function.

Fn Quit
To exit the screen.

To change to one of the displayed settings, or access a quick check function, do one of the following;

- Tap on the icon on the touch screen.
- Highlight a field and press ↵.
- Highlight a field and press .
- Highlight a field and press **OK**.
- Press the number next to the setting or function.

Leica GPS Favourites



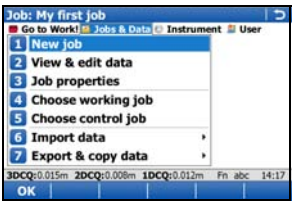
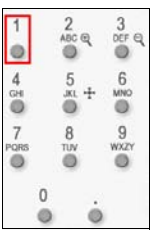
OK
To apply the selected setting or to access the selected function.

Fn Quit
To exit the screen.

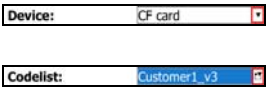
To change to one of the displayed settings, or access a quick check function, do one of the following;

- Tap on the icon on the touch screen.
- Highlight a field and press ↵.
- Highlight a field and press .
- Highlight a field and press **OK**.
- Press the number next to the setting or function.

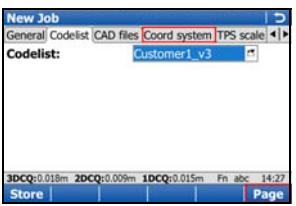
Accessing a menu option

Description	Illustration
There are three ways to access a menu option. 1 Using the touchscreen functionality. Tap on the menu item using the stylus provided 2 Using the up and down navigation arrows. Move the focus to the menu item. Select **OK**, or press the **OK** button, or the **ENTER** button. 3 Using the numbered keypad. Select the number that corresponds to the menu item. For example, press 1 from the **Jobs & Data** menu to access the **New job** screen.	 

Accessing a selectable list

Description	Illustration
A downward arrow beside a field, indicates there are more choices available in a selectable list. A box and a downward arrow beside a field, indicates that there are more choices and functionality available in a separate screen. To access the list or screen use the touchscreen functionality to tap on the icon, or move the focus to the field and press the **ENTER** button.	

Accessing a page within a screen

Description	Illustration
To access another page within a screen, either: • Tap on the page tab for the page to be displayed, or • Select **Page** until the page is displayed	

Exiting a screen without making a change

Description	Illustration
To exit a screen without making a change, either: • Tap on the return icon, or • Press the **ESC** button	

Wizards

The wizards following are available to make your daily work easier. Each of them lead you through a series of steps, performing tasks in a specific sequence. For detailed descriptions of the wizards, please refer to the Leica Viva Series Technical Reference Manual.

Wizard	Description
SmartWorx StartUp Wizard	Define the behaviour of your instrument for a general start-up.
RTK rover wizard	Set up your real-time rover.
TPS connection wizard	Connect your CS field controller with your TPS instrument.
Internet wizard	Connect your CS field controller with the Internet.

Wizard	Description
CS connection wizard	Connect your CS field controller with your TS11/TS15 instrument.
Working style wizard	Configure the parameters and functions of SmartWorx Viva so that it suits to your preferred method of working and save the settings in a working style.
Check & Adjust Wizard	For TS11/TS15. Check and adjust the instrument in the field by running through specific measurement procedures.

Taking an image using the instruments camera

Step	Description
1.	Tap the camera icon in the icon bar to access the **Capture Image with Camera** screen. ☞ For a CS field controller, which is configured to use a TS11/TS15 instrument with a wide-angle camera, the **Capture Image with Camera** screen has two pages (**TS wide-angle** and **CS camera**). Select which camera to use by clicking the corresponding page or using **Page** to toggle between both pages.
2.	Aim the camera to the desired target.

Step	Description
3.	Check the view at the display.
4.	Press **OK** or click **Cpture** to take the picture. **Cpture** changes to **Store**.
5.	The image can be overlaid with a sketch. Click the icon in the toolbar to activate sketching. The icon is displayed. Additional icons are displayed to control the line weight, style and colour of any lines you "sketch" on top of your image. The image cannot be moved.
6.	Press **Store** to save the image. A confirmation window opens. The image can be linked to a point, line or area.
7.	• Press **Prev** to link the image with the last stored point and save it. • Press **Any** to link the image with any point, line or area of the current working job and save it. • Press **No** to save the image in the current working job without linking it to a point, line or area. After the image has been stored you automatically return to the **Capture Image with Camera** screen.

Taking a screenshot

Step	Description
1.	Press the hotkey configured to **User - Screenshot capture** or hold **Fn** while pressing '**.**'. A screenshot of the current SmartWorx Viva screen is created and displayed in the Image Notes screen. ☞ The hotkey functionality is not available on the CS10 field controller.
2.	The screenshot can be overlaid with a sketch. Click the icon in the toolbar to activate sketching. The icon is displayed. Additional icons are displayed to control the line weight, style and colour of any lines you "sketch" on top of your image. The image cannot be moved.
3.	Press **Store** to save the screenshot. A confirmation window opens. The screenshot can be linked to a point, line or area.
4.	• Press **Prev** to link the screenshot with the last stored point and save it. • Press **Any** to link the screenshot with any point, line or area of the current working job and save it. • Press **No** to save the screenshot in the current working job without linking it to a point, line or area. ☞ After the screenshot has been stored you automatically return to the screen where the screenshot has been taken from.

2.3 Connecting TPS instrument and CS field controller

Connecting TPS instrument and CS field controller setup step-by-step

Step	Description
1.	Set up your TPS instrument. Refer to "1.2 Setting Up the TPS Instrument".
2.	Fix either a hand strap to your CS field controller or fix your CS field controller to a holder and pole.
3.	Turn on your TPS instrument and your CS field controller. Ensure that your TPS instrument is ready for remote control. The RCS mode is only available for the CS15 field controller while the datalogger mode is available for all CS field controllers.
4.	Start the SmartWorx Viva software. Refer to "2.1 SmartWorx Viva".
5.	Select **Main Menu: Instrument\Instrument connections\TPS connection wizard** to start the **TPS connection wizard**. For detailed descriptions, please refer to the Viva Series Technical Reference Manual.
6.	Follow the **TPS connection wizard** and connect your TPS instrument to your CS field controller.

3 Jobs & Data

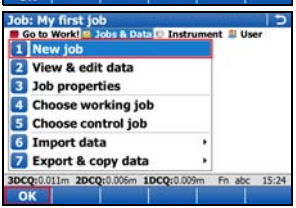
3.1 Creating a New Job

Creating a job step-by-step

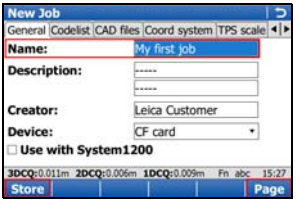
General steps to create your first job in SmartWorx Viva.

Creating your first job

- From the **Main Menu**, select **Jobs & Data** and press **OK**.


Job: My first job
Go to Work! Jobs & Data Instrument User
1 New job
2 View & edit data
3 Job properties
4 Choose working job
5 Choose control job
6 Import data
7 Export & copy data
3DCQ:0.011m 2DCQ:0.006m 1DCQ:0.009m Fn abc 15:24
OK

- Select **New job** from the **Jobs & Data** menu and press **OK**.



- Enter a name for the job.
- Use **Page** to toggle between the pages to set the proper **Codelist**, **CAD files**, **Coord system**, **TPS scale** and **Averaging**.
- Press **Store** to save the job.

You have finished creating your first job, which is selected as current working job. You will automatically return to the **Main Menu** and are ready to start the next activity.

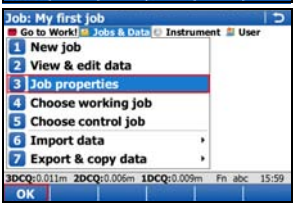
3.2 Creating a Codelist

Creating a codelist step-by-step

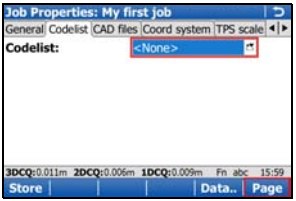
Generals steps to create your first codelist in SmartWorx Viva.

Creating your first codelist

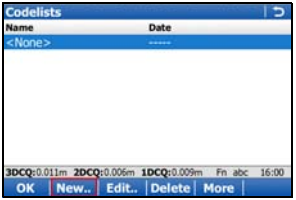
- From the **Main Menu**, select **Jobs & Data** and press **OK**.



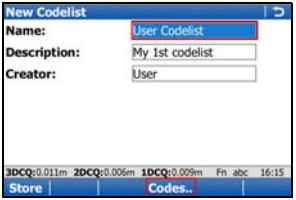
- Select **Job properties** from the **Jobs & Data** menu and press **OK**.



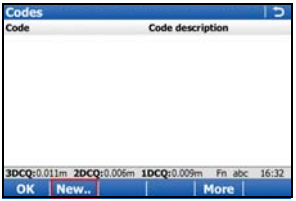
- Press **Page** to change to the **Codelist** page.
- Tap on the selectable list to open the **Codelists** screen.

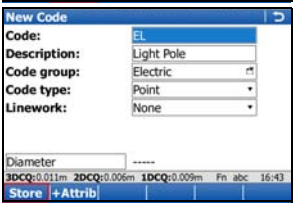


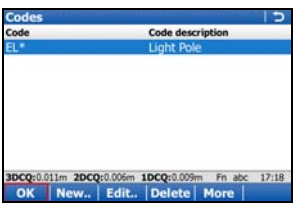
- Press **New..** to create a codelist.



- Type in a **Name** (**Description** and **Creator** are optional).
- Press **Codes..** to open the **Codes** screen.





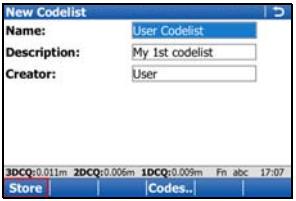


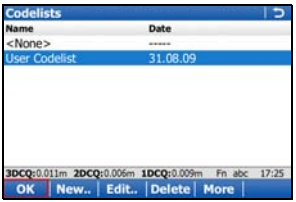
Creating a code

- Press **New..** to create a code.
- Type in a **Code** (EL) and a **Description** (Light Pole), select the **Code group*** (Electric), the **Code type** (**Point**) and the **Linework** (**None**) and create an attribute (Diameter).
- Press **Store** to save the new code.

* The **Code group** has to be created first before it can be selected.

- Press **OK** to return to the **New Codelist** screen.





Storing the codelist

- Press **Store** to save your codelist. You will automatically return to the **Codelists** screen.
- Press **OK** to return to **Job Properties:**, **Codelist** page.
- Press **Store** to save your job and to return to the **Main Menu**.

You have created your first codelist, with a code and a code group and attached it to your current working job.

3.3 Importing ASCII Data into a Job

Objective

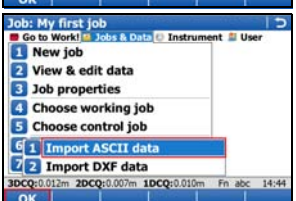
Importing point objects into the working job by using the **Import ASCII data** functionality.

At least one ASCII file with any file extension must be stored in the \DATA directory of the internal memory or data storage device.

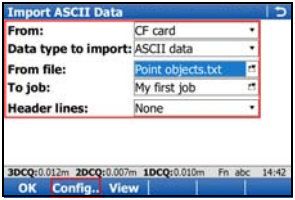
Import ASCII data step-by-step

Starting the ASCII Importer

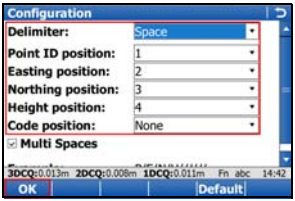
- From the **Main Menu**, select **Jobs & Data**.


Job: My first job
Go to Work! Jobs & Data Instrument User
1 New job
2 View & edit data
3 Job properties
4 Choose working job
5 Choose control job
6 1 Import ASCII data
7 2 Import DXF data
3DCQ:0.012m 2DCQ:0.007m 1DCQ:0.010m Fn abc 14:44
OK

- In the **Jobs & Data** menu, select **Import data**, then **Import ASCII data** and access the **Import ASCII Data** screen.

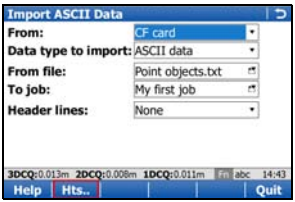


- Select the data storage device, the data type (**ASCII data**), the file to be imported, the working job into which the data has to be imported and define whether header lines have to be considered.
- Enter the **Configuration** screen (**Config..**).

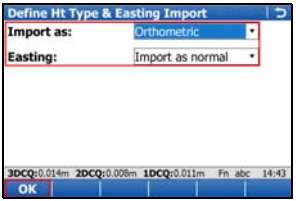


Configuring the ASCII Importer

- Select the **Delimiter**.
- Define the position for Point ID, Easting, Northing, Height and Code (if applicable).
- Confirm the configuration settings and return to the **Import ASCII Data** screen (**OK**).

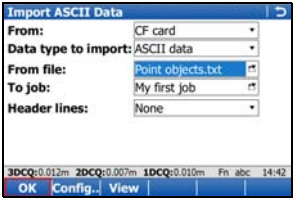


- Enter the **Define Ht Type & Easting Import** screen (**Fn Hts..**).



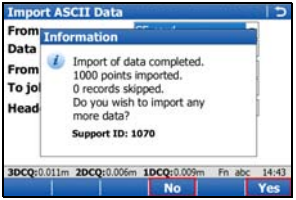
Define height type and Easting import

- Define how heights (**Orthometric** or **Ellipsoidal**) and how the Easting is imported.
- Confirm the configuration settings and return to the **Import ASCII Data** screen (**OK**).



Importing the ASCII data

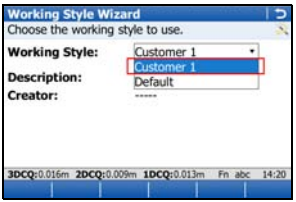
- Import the ASCII data to the working job (**OK**).



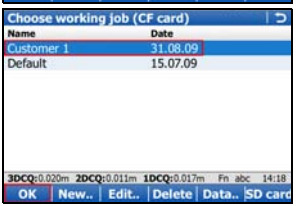
- After importing the ASCII data to the working job, complete the import (**No**) and return to the **Main Menu** or import another ASCII data (**Yes**).

You have completed importing ASCII data into your current working job.

Getting started



- Check that the correct working style (see **User**, **Working style wizard**) is being used.



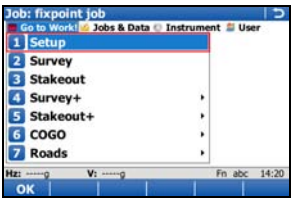
- Check that the correct working job (see **Jobs & Data**, **Choose working job**) is being used.

4.1 Setup

Objective

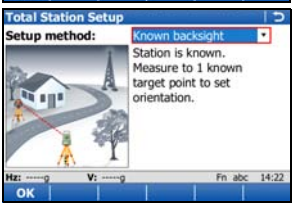
Determine the station coordinates and the orientation of your TPS instrument using TPS measurements and/or GNSS measurements.

Setting up with SmartStation step-by-step



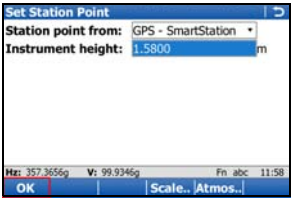
Starting Setup

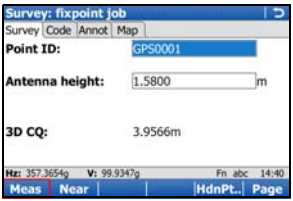
- In the **Go to Work!** menu, select **Setup**.

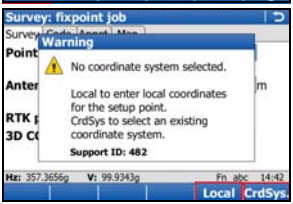


- Choose one of the following setup methods and select **OK**:
  - **Set orientation**
  - **Known backsight**
  - **Multiple backsights**
  - **Transfer height**

These are the only methods applicable for a setup with SmartStation.







Setting the station point

- **Station point from**: Select **GPS - SmartStation**.
- **Instrument height**: Enter the height of the instrument station.

Ensure that the correct antenna type is set. This will ensure the vertical offset between the TPS and GS12/GS15 instrument is accounted for.

- **OK** to access the GPS Survey screen.

Measuring the station point

- **Meas** to start the point measurement.
- **Stop** to end the point measurement.
- **Store** to store the point information.

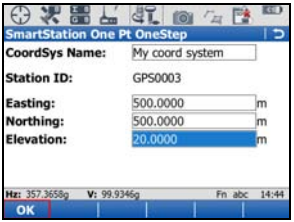
Selecting a coordinate system

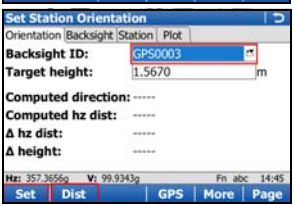
If a coordinate system has not been selected:

- **Local** to access **One Pt OneStep**

OR

- **CrdSys.** to access **Coordinate Systems** to select an existing coordinate system. On this screen, the creating and editing of coordinate systems is also available.





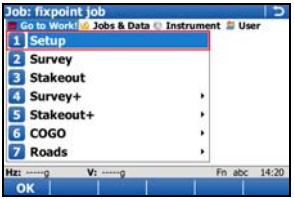
- **CoordSys Name** Enter a name for the local coordinate system.
- Enter local coordinates for the setup point.
- **OK** to set the coordinate system.

Setting the station orientation

- **Backsight ID**. Select the relevant point id for the backsight point.
- **Dist** to measure the point.
- **Set** to set the station orientation and return to the **Main Menu**.

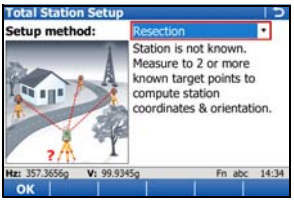
Now you have completed your setup with SmartStation.

Setting up with SmartPole step-by-step



Starting Setup

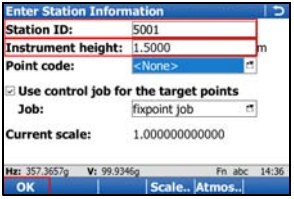
- In the **Go to Work!** menu, select **Setup**.



- Choose one of the following setup methods and select **OK**:
  - **Multiple backsights**
  - **Resection**
  - **Known backsight**

These methods are the only methods applicable for a setup with SmartPole.

- The process for **Setup method:Resection** is shown here.

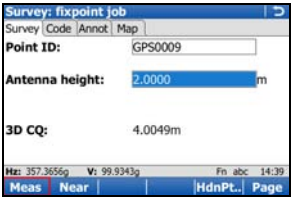


Enter station information

- **Station ID** Enter a name for the station.
- **Instrument height**: Enter the height of the instrument station.
- If all your control points will come from GPS, leave **Use control job for the target points** unselected.
- **OK** to access the measure target points screens.

Measuring the target points

- **Target height**. Enter your prism height. When moving to GPS Survey, the correct vertical offset will be applied, so you automatically have the correct antenna height.
- **GPS** to first enter GPS Survey before returning to this screen.


Survey: fixpoint job
Survey Code Annot Map
Point ID: GPS0009
Antenna height: 2.0000 m
3D CQ: 4.0049m
Hz: 357.3656g V: 99.9343g Fn abc 14:39
Meas Near HdnPt.. Page

- **Meas** to start the point measurement.
- **Stop** to end the point measurement.
- **Store** to store the point information and automatically return to **Measure Target 1** in TPS mode.

- **Meas** to measure to target point 1 with TPS.

Screen automatically updates to **Measure Target 2**.

- Repeat the previous steps to measure the other target points.

  GPS to first enter GPS Survey before returning to the **Measure Target** screen, then

  Meas to measure to each target point with TPS.

When enough target points have been measured to calculate the station location, the softkey **Calc** will appear.

- **Calc** to calculate the position of the station.

Setting the station

- Review the results of the station setup.
- **Set** to set the station position and return to the **Main Menu**.

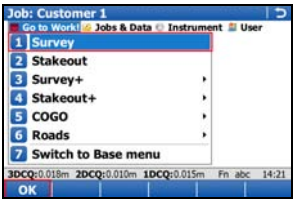
You have completed your setup with SmartPole.

4.2 Survey

Objective

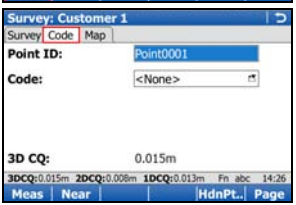
Surveying point objects (fire hydrants, light poles etc.) by choosing codes manually.

Surveying point objects step-by-step

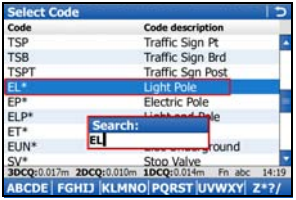


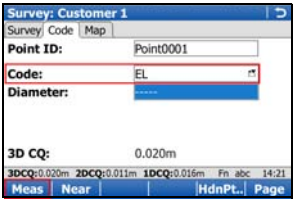
Starting Survey

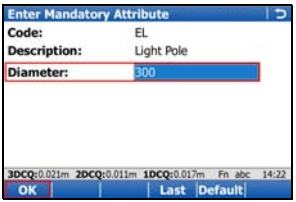
- In the **Go to Work!** menu, select **Survey** and access Survey.



- Switch to the **Code** page.







Selecting the code

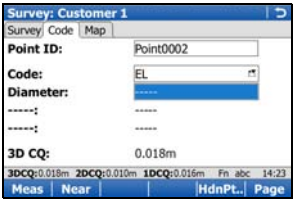
- Highlight **Code** and select the code EL (for Electric Light pole). To select the code EL, toggle to the code or type in the letters to open the drop-down list and search for the code.

☞ Enter the search text in the same case as the code (for example capitals).

Measuring the point object

- When the code is selected, press **Meas** to measure the point object.

- After the measurement has been stopped the **Enter Mandatory Attribute** screen will appear since the attribute **Diameter** is mandatory and is currently blank.
- Enter a diameter of **300** (mm) and press **OK** to store the point.



You have finished measuring your first point object.

Once the point is stored then the code and attribute value that was stored are displayed.

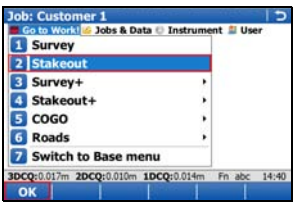
4.3 Stakeout

Objective

Staking out point objects. To make your life easier you will define a filter before staking out the point object. The filter will be defined the way that only points with a certain code and those points which have not yet been staked will be available to be staked out.

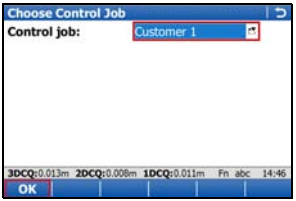
To accelerate the working example, skip the steps regarding the filters and proceed directly with staking out the point object.

Staking out point objects step-by-step



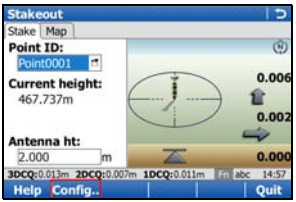
Starting Stakeout

- In the **Go to Work!** menu, select **Stakeout** and access **Stakeout**.



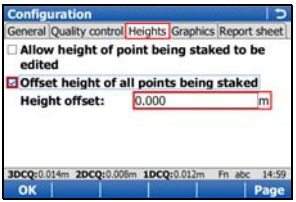
Choose Control Job

- Select the job which contains your point objects to be staked out.
- Press **OK** to enter the **Stakeout** screen.

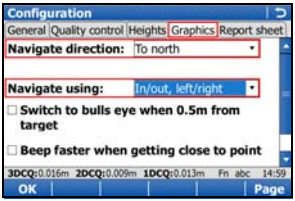


Configuring Stakeout

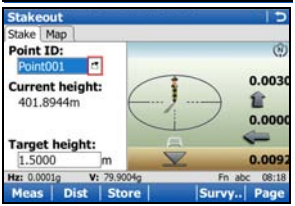
- Press **Fn Config..** to access the **Configuration** screen.



- Configure the following settings:
  - **General** page, **Quality control** page and **Report sheet** page: Leave all settings unchanged.
  - **Heights** page: Check **Offset height of all points being staked** and set **Height offset** to **0.000** m.

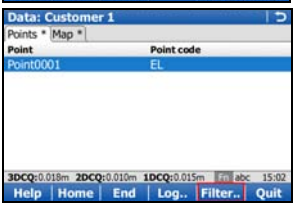

Configuration
General Quality control Heights Graphics Report sheet
Navigate direction: To north
Navigate using: In/out, left/right
Switch to bulls eye when 0.5m from target
Beep faster when getting close to point
3DCQ:0.016m 2DCQ:0.009m 1DCQ:0.013m Fn abc 14:59
OK
Page

- **Graphics** page: Set **Navigate direction:** Following arrow and **Navigate using:** In/out, left/right.
- Press **OK** to return to the **Stakeout** screen.

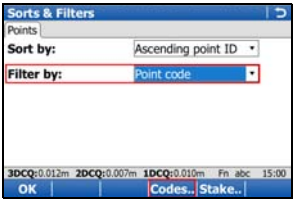


Setting up filters

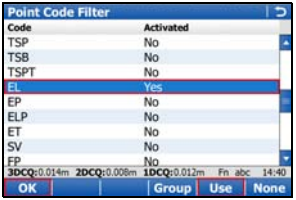
- Tap on the box with the downward arrow right of the Point ID to open the Data screen. All points stored in the control job are shown.



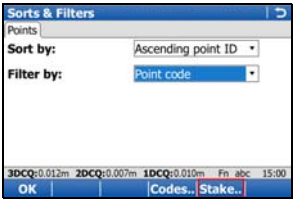
- Press **Fn Filter..** to access **Sorts & Filters** screen.



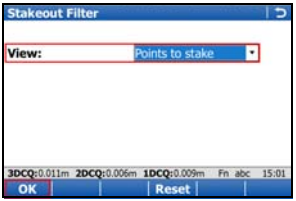
- Set **Filter by: Point code**.
- Press **Codes..** to access **Point Code Filter** screen.



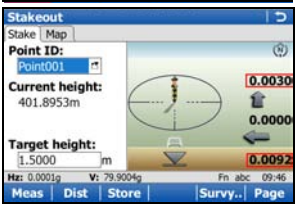
- Press **None** to set all codes to No.
- Highlight code **EL** and press **Use** to activate it.
- Press **OK** to return to the **Sorts & Filters** screen.



- Press **Stake** to access **Stakeout Filter** screen.



- Set **View: Points to stake**.
- Press **OK** three times to return to the **Stakeout** screen.



Staking out your first point object

- Navigate to the point and press **Dist**.
- While measuring the point you still can see the differences between the coordinates of the design point and the coordinates of the point you measured.

☞ The continuous measurement mode can be used for staking out.

- The next point in the list to be staked out is displayed after the point was measured and stored by pressing **Meas**.

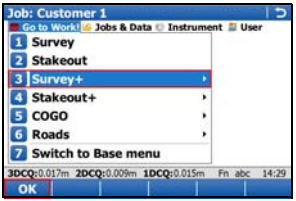
☞ You finished staking out your first point.

4.4 Reference Line

Objective

Measuring or staking point objects (fire hydrants, light poles etc.) relative to a reference line.

Measuring point objects relative to a reference line step-by-step

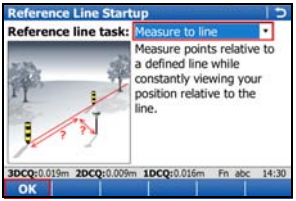


Starting Measure to ref line

- In the **Go to Work!** menu, select **Survey+** and access **Survey+** menu.

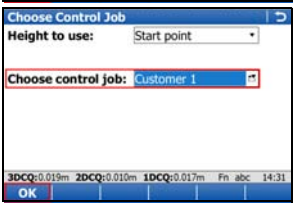
  Staking a reference line can also be accessed under **Go to Work!** / **Stakeout+** / **Stake to ref line**.

- Select **Measure to ref line** and continue (**OK**).


Reference Line Startup
Reference line task:
Measure to line
Measure points relative to a defined line while constantly viewing your position relative to the line.
3DCQ:0.019m 2DCQ:0.009m 1DCQ:0.016m Fn abc 14:30
OK

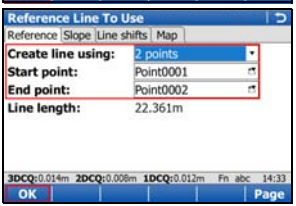
Define the Reference line task

- Set **Reference line task: Measure to line** and continue (**OK**).



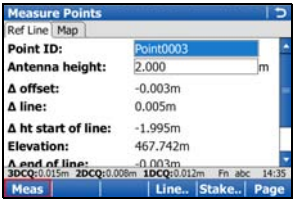
Choose Control Job

- Select the job which contains the points used to define the reference line.
- Press **OK** to access **Reference Line To Use** screen.



Define the reference line to be used

- Set **Create line using: 2 points**
- Select a **Start point**
- Select an **End point**
- Press **OK** to access **Measure Points** screen.



Measure the point object relative to the reference line

- In the **Measure Points** screen, press **Meas** to measure the point.

You have finished measuring your first point object relative to a reference line.

Appendix A Working with Memory Devices

A.1 Formatting a Memory Device

General

Formatting a memory device before storing data on it, is required if the device is new, or if all data on the device must be deleted.

By activating the format command all data will be lost. Make sure that all important data on the device has been backed up before formatting. If formatting the internal memory, make sure that all important data is first transferred to the computer.

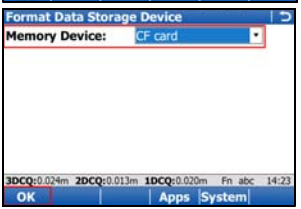
Formatting the memory device will make it incompatible with System 1200 instruments with firmware version 7.60 or earlier. To become usable with System 1200 again, the device would need to be reformatted on a System 1200 instrument.

To exit the screen without formatting the memory device, press the **ESC** key. This returns to the previous screen without running the format command.

Formatting a memory device step-by-step

Job: fixpoint job
Go to Work! Jobs & Data Instrument User
1 Work settings
1 Transfer user objects
2 Load firmware & Apps
3 Load licence keys
4 Field to office
5 Format data storage devices
6 View contents of ASCII files
3DCQ:0.030m 2DCQ:0.017m 1DCQ:0.025m Fn abc 14:22
OK

- From the **Main Menu**, select **User\Tools & other utilities\Format memory devices**



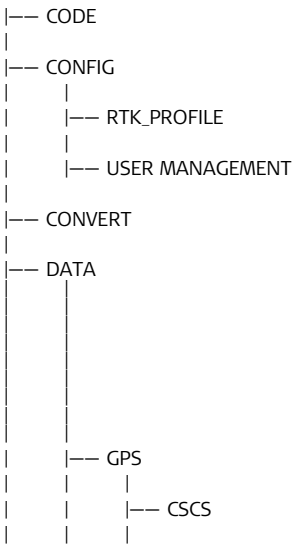
- **Memory device**: Select the device to format
- Select **OK** to continue with the formatting.

Format Data Storage Device
Confirmation
CF card will be formatted & all data will be lost.
Note that this card will then NOT be able to be used in System1200 instruments. The card must be re-formatted on a
3DCQ:0.023m 2DCQ:0.013m 1DCQ:0.019m Fn abc 14:21
No
Yes

- Select **Yes** to complete the formatting of the memory device, OR
- Select **No** to cancel formatting of the memory device and return to **Format Memory Device**.
- Once the formatting of the memory device is completed the system returns to the **Main Menu**.

A.2 Directory Structure of the Memory Device

Directory structure



- Codelists, various files
- Working style files (*.xfg)
- RTK profile files (*.rpr)
- Administration settings files (*.usm)
- Format files (*.frt)
- ASCII (*.txt), DXF (*.dxf), LandXML (*.xml), Terramodel (*.xml), Carlson (*.cl) and Shape files (*.shp, *.shx and *.dbf and all other shape file components) for import/export to/from job
- Section files for Carlson (*.sct) and ASCII report files for Terramodel (*. txt) for import to job
- Report sheets created from applications
- CSCS field files (*.csc)

| | |—— GEOID	• Geoid field files (*.gem)
| | |	
| | |—— RINEX	• RINEX files
| |	
| |—— XML	• Alignment Editor Alignments (*.xml)
|	
|—— DBX	• DTM jobs, various files
| |	• Coordinate system file (Trfset.dat)
| |	• Job files for System 1200
| |—— JOB	• Job files, various files. Jobs are stored in a folder per job.
| |	
| |—— MAP	• Map related files (for example *.mpl), stored in a subfolder per job.
| |	
| |—— IMAGES	• Image files (*.jpg), stored in a subfolder per job.
|	
|	
|—— DOWNLOAD	• Various files, downloaded by the Field to Office application (*.*)
|	
|—— GPS	• Antenna file (List.ant)
|	• GSM/Modem station list (*.fil)
|	• Server list (*.fil)
|	
|—— GSI	• GSI files (*.gsi)
|	• ASCII files for export from job (*.*)

| |—— SYSTEM	• Application files (*.axx) • Firmware files (*.fw) • Language files (*.s*) • Licence file (*.key) • System files (VivaSystem.zip)

Appendix B Uploading System Files

Tips and Tricks

- Uploading objects can take some time. Ensure that the battery is at least 75% full before beginning the upload, and do not remove the battery during the upload process.
- Applications will be installed in English and in any other language that is already loaded onto the instrument. If a new language is loaded after an application has been installed, the application will need to be reinstalled to become available in the new language.
- It is not possible to have more than three language files stored on the instrument. English is always available as the default language and cannot be deleted.

Copy the object to upload into the /SYSTEM directory of the data storage device and insert the device into the instrument.

Firmware files use the extension *.fw, application files use the extension *.axx, and language files use an extension that is individual to each language.

Uploading firmware, applications or languages step-by-step

Job: fixpoint job
Go to Work! Jobs & Data Instrument User
1 Work settings
1 Transfer user objects
2 Load firmware & Apps
3 Load licence keys
4 Field to office
5 Format data storage devices
6 View contents of ASCII files
3DCQ:0.012m 2DCQ:0.007m 1DCQ:0.010m Fn abc 14:17
OK

- From the **Main Menu**, select **User\Tools & other utilities\Load firmware & Apps**

- **Object to transfer**: Select the type of object to upload
- **From**: Select the data storage device where the object is located
- **App** / **Firmware** / **Language**: Select the file name of the object
- Select **OK** to upload the object onto the instrument.

- The upload process can take some time. A message will appear when the upload is complete.

Appendix C Leica Geo Office

Description

Leica Geo Office (LGO) is an office software consisting of a suite of standard and extended programs for the viewing, exchange and management of data.

Jobs, codelists and other related files can be transferred from the instrument or data storage device to LGO for post-processing.

In LGO, the Data Exchange Manager enables data to be transferred between an instrument and a computer. The Import Raw Data function in LGO, imports the data from the computer or data storage device into an LGO project.

Transferring files to LGO step-by-step

Step	Description
1.	• If data is located on a data storage device, insert the device into the appropriate slot or port of the computer. Go to step 7. • If data is stored on the CS10/CS15 instrument, connect the instrument to the computer using the docking station or a USB cable. Copy the data to the computer using Microsoft ActiveSync or Windows Mobile Device Centre. Go to step 7.. • If data is located on the TPS instrument, connect the instrument to the computer using a USB cable, Bluetooth connection, or an RS232 serial cable. Go to step 2.
2.	Select **Tools**/**Data Exchange Manager** to open the **Data Exchange Manager** window.
3.	Right click in the **Data Exchange Manager** window and select **Settings...**. • For a USB connection, ensure that the USB port settings are configured for the instrument type being connected. • For a Bluetooth or RS232 serial cable connection, ensure the instrument interface settings and the computer COM settings are configured correctly. Select **OK** to close the **Setting** window.

Step	Description
4.	In the folder directory on the left of the **Data Exchange Manager** window, open the **Serial Ports** or **USB** COM node to which the instrument is connected. Highlight the object to transfer.
5.	In the folder directory on the right, open the **My Computer**/**Files** folder location. Select a folder on the computer hard drive where the object can be transferred to and saved.
6.	Drag and drop, or copy and paste, the object from the directory on the left side to the selected folder on the right side. All object-specific files will be copied to the selected folder on the computer hard drive.
7.	To import the files into LGO select **Import**/**Raw Data...** or select the icon from the toolbar.

Step	Description
8.	In the **Import Raw Data** window, select the type of data to be imported in the **Files of type**: drop down list. Values are; • SmartWorx raw data • GSI (Observations) • GSI (Points only) • Database points (DBX, GeoDB) • LandXML ☞ When importing GSI data, click the Settings button to define additional import settings for how the TPS raw data will be imported to a project.
9.	Browse through the folder directory and select the file or folder to import. The file or folder can be on the computer hard drive or on the inserted data storage device.
10.	Select **Import** to proceed to the **Assign** window.

Step	Description
11.	In the **Assign** window, before assigning the data to a project, the following functionality is available: • Select the **TPS** tab to preview the raw TPS data. On this page, it is possible to select or deselect which data is assigned to the project. • Select the **GPS** tab to preview the raw GPS data. On this page, it is possible to select or deselect which data is assigned to the project. • Select the **Settings** tab to modify the assign settings. The settings available depend on the type of data to be imported. • Select the **Backup** button to save, if desired, the raw data from a data storage device to the computer hard drive. Select a directory from the browser and select **OK** to confirm. • Select the **Fieldbook** button to generate a Fieldbook Report on the jobs to be imported.
12.	To import the data to a project: • In the **General** tab, select an existing project from the list. OR • Create a new project by right clicking and selecting **New...** from the context menu.
13.	Select the **Assign** button to import the data into the selected project.

Total Quality Management: Our commitment to total customer satisfaction.

Leica Geosystems AG, Heerbrugg, Switzerland, has been certified as being equipped with a quality system which meets the International Standards of Quality Management and Quality Systems (ISO standard 9001) and Environmental Management Systems (ISO standard 14001).

Ask your local Leica Geosystems dealer for more information about our TQM program.

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- when it has to be **right**

Leica Geosystems